



JOSEPH LISTER

Professor of Surgery in the University of Glasgow
(1860-1869)

LORD LISTER

1827-1912

An Oration

By

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LORD LISTER

THE commemorative instinct of mankind, to use the apt expression of Sir Sidney Lee, cannot be wholesomely and advantageously exercised during the lifetime of him whose character and achievements we desire to commemorate ; and yet so anxious has this University always been to honour Lord Lister, once a Professor within her walls, that so long ago as 1903, while he still lived, the Court contemplated commemorating, on such an occasion as the present, the great work which he had accomplished. Before, however, any official communication on the subject was sent to him, I was asked by the late Principal Story to ascertain whether the state of his health was such as would permit him to attend and be the guest of the University at a banquet on the evening of the appointed day. I refer to this fact in order that I may read the reply which my letter to him elicited. " I feel almost overwhelmed," he wrote on 3rd March, 1903, " by the kindness of this invitation by the University, and I should have felt it as great an honour as a pleasure to have accepted it, had my health permitted me to do so. But this, I am sorry to say, is not the case. It is true that I have been regaining strength since I last wrote to you, but the progress is extremely slow, and I cannot, by any means, reckon on being in a fit condition in June

to take part in such a ceremony as the proposed Commemoration. I should have felt this disappointment more than I do, did I not feel really glad that you will be relieved from . . . giving the 'Oration.' In your contribution to the Jubilee Number of the *British Medical Journal*, you had definite facts to describe in technical language, which would be altogether out of place in an address to an audience composed chiefly of laymen. And I really do not know what you could have had to say. Will you please tell the Principal how deeply I feel his kindness in offering me this very high honour and how much I regret that the state of my health compels me to decline it? "

However great my embarrassment might have been at that contemplated Commemoration had it taken place, it would have consisted not indeed in the fact that I would have had little or nothing to say, as Lord Lister modestly suggested in the letter which I have read, but rather in the difficulty of saying what I had to say during his lifetime, perhaps even in his presence. A man's work and character cannot be freely discussed while he still lives, inseparable as they become in any consideration of him after he has died. "The commemorative instinct," says Sir Sidney Lee, in his Leslie Stephen Lecture on the *Principles of Biography*, "craves before all things the completeness which death alone assures. No man's memory can be accounted great until it has outlived his life." But now that Lord Lister has gone from the company of the living, and has taken his place amongst famous men and our fathers that begat us, whom it is always our duty and our privilege to praise, none more than he deserves to be held in everlasting remembrance.

The deaths of many good and great men excite the grateful praises of a family or a profession, perhaps of a city or even of a nation ; but seldom in the history of the world has all civilized mankind mourned around the bier of any one man and offered homage to his memory as their great benefactor. And yet this is what really happened when Lord Lister died in February, 1912. Not only in Westminster Abbey was his death publicly mourned, but in every intellectual and scientific centre in the world his life was acclaimed as that of one from whose hands had fallen gifts of priceless value to mankind. Great men everywhere united in his praise, and journals of every land and every language vied with each other in expressing the debt which the human race owed to him.

Joseph Lister was born on 5th April, 1827, at Upton, then a comparatively rural district, in the western portion of the county of Essex. He came of a long-lived family who belonged to the religious body known as the Society of Friends. His father died in his eighty-fourth year, and his paternal grandfather lived to the great age of ninety-eight. I have heard Lord Lister say that he remembered, when a little boy, sitting on that grandfather's knee and being told by him that, when he was at school at Kendal in Cumberland, the school one day turned out to see Prince Charlie and his highlanders as they passed northwards on their return from Derby. When Lister related this to me he was himself a man of eighty, and the fact has always appealed to me as an interesting corroboration of that remark of a great writer—I think Lord Bacon—"the lives of old men convince us of the truth of history."

But besides coming of a long-lived and deeply religious stock, he had the further advantage of being surrounded from his earliest years by an atmosphere of scientific research. His father, Joseph Jackson Lister, although engaged in business in the city, diligently pursued the study of optics, was a distinguished microscopist and became a Fellow of the Royal Society. The microscope before his time, as has been often remarked, was a scientific toy, "distorting more than it magnified." It was he who converted it into the really invaluable instrument of research which it now is, by his perfecting of the achromatic lens ; and the story of his life, of his work in the improvement of microscopic lenses and of his "law of the aplanatic foci" has been told in an interesting biographical sketch in the *Dictionary of National Biography* by his distinguished son.

Lister was educated at Quaker schools, first at Hitchin and afterwards at Tottenham ; and he subsequently studied Arts and Medicine at University College, London. In 1847 he graduated B.A., and in 1852, M.B. in the University of London. During his school and college life he acquired an excellent knowledge of Latin and Greek, and to his latest years a copy of the works of Horace lay always on the table of his library, the occasional reading of which—and especially of some of the odes—was a great mental refreshment. He also at this time no doubt laid the foundation of that knowledge of French and German which stood him in such good stead in after years. French he read with ease and spoke with fluency ; and on the 27th December, 1892, at the vast meeting gathered in Paris to celebrate Pasteur's Jubilee, where he had the honour of representing British Medicine and Sur-

gery, he delivered a short address in French, and himself received a great ovation. German he also read easily and spoke with, at all events, very considerable fluency. I mention these facts because they proved in later years of great value, not only enabling him to keep himself abreast of whatever scientific work, bearing on his own or cognate subjects, was published in foreign journals and books, but also giving him the power of conveying his teaching directly and vividly to the minds of the visitors from every country who flocked, in constantly increasing numbers, to his wards in Glasgow, Edinburgh, and London, to learn from his own lips as well as to witness in his own practice, the new surgery which he was inaugurating. And this ability to exchange ideas freely with men of other nationalities than his own was perhaps, I have often thought, one of the causes of the ultimate rapid spread of his doctrines and practice over the whole civilized world ; while, in its turn, to this is to be attributed the opportunity afforded him as an old man—an opportunity rarely vouchsafed to mortals—of seeing in his own lifetime the complete realization of his youthful hopes and aspirations, the full fruition of his maturer researches and labours.

After graduation in Medicine he served as House Surgeon and House Physician respectively under Mr. Erichsen and Dr. Walsh in University College Hospital, and even at that early date he made some not unimportant observations on the subject of fatal blood-poisoning by the putrefying discharges of wounds. During this period also he engaged diligently in physiological research, under the inspiration and guidance of Professor Sharpey, a native of Dundee, who was Professor of Physiology in

University College, and who, in some sense, may be regarded as the Father of Modern Physiology in England. With his approval young Lister, while still a hospital resident, published in the *Quarterly Journal of Microscopical Science* two able and original papers on physiological subjects. Thus was early shown the bent of his mind.

In 1853 he entered on what may be called the second stage of his professional career, and both of these stages, as we look back upon them, can be recognized as periods of constant preparation for the real work which was ahead of him. He resolved to spend a holiday of some weeks in Scotland, and, armed with a letter of introduction from Professor Sharpey to Professor Syme of Edinburgh, he first proceeded there, and, as events turned out, did not leave it for seven years. He was at once struck with admiration for Syme, not only as a great operator, but as a man of resourceful power, of strong intellect and of wise judgment. Although he had already completed his hospital training as a student and resident hospital assistant, both in Medicine and Surgery, he requested, in that spirit of modesty which characterized him all through life, to be appointed a dresser under Mr. Syme. There was no vacancy at the time, but impressed by the earnestness and ability of the young man, Mr. Syme appointed him as a Supernumerary Dresser. He obtained permission from his father to remain in Edinburgh for a more or less indefinite period of further study ; and so began a close and lasting friendship between himself and Mr. Syme. He afterwards was appointed his house surgeon, and still later his assistant in private practice. On 23rd April, 1856, he

married Syme's eldest daughter Agnes. This union was a most auspicious one and fraught with much happiness to both, although without issue. It lasted until April, 1893, when Lady Lister (as she had become in consequence of the Baronetcy conferred on her husband in 1883) died of an acute double pneumonia at Rapallo in Italy, where they were spending a short spring holiday. He was absolutely alone with her during her short illness and quick death, travelled alone across the Continent to London, bringing with him "that dark freight, a vanished life." He arrived a sorrowful and broken man, and never entirely recovered from the blow. The character of the wife of every great man demands more than a passing note, for surely here, if anywhere, may woman's influence be seen and acknowledged. Rather than attempt myself to characterize Lady Lister, I prefer to give you the opinion of the late Dr. John Brown, the author of *Rab and his Friends*, as told to me by the widow of Professor Veitch, who was a colleague of Lister in the old College in the High Street of Glasgow, having been appointed to the Chair of Logic in 1862, two years after Lister had become a Member of the Senate. Dr. John Brown was a pupil and afterwards the life-long friend of Mr. Syme, and was his family physician. He had attended Lady Lister on one occasion, when she was a child, during a severe illness which involved a period of several days of complete unconsciousness. Shortly after the Veitches had settled in Glasgow they chanced to meet Dr. Brown one evening at a friend's house in Edinburgh. During conversation the Listers were mentioned, and Dr. Brown said to Mrs. Veitch: "Lister is one who, I believe, will go to the very top of his profession and, as

for Agnes, she was once in Heaven for three or four days when she was a very little child, and she has borne the mark of it ever since." I shall not attempt to add to those words regarding her—alike honouring to her of whom they were spoken and to him who spoke them—except to say that she took a keen interest in all her husband's work, although not even her most intimate friends could have gathered the fact from her conversation. Several large and closely-written volumes of dictated notes in her handwriting, recording the steps and results of her husband's experiments and investigations, were left in the hands of his executors.

In 1855 Lister was appointed one of the Assistant Surgeons of the Edinburgh Royal Infirmary, being specially attached to Mr. Syme's clinique, and in the winter session of 1855-56 he began to deliver lectures on Surgery in the Edinburgh Extramural School of Medicine. During the whole of his stay in Edinburgh at this time (*i.e.* between 1853 and 1860) he industriously pursued physiological and histological researches, and many important contributions from his pen appeared in scientific and medical periodicals. Perhaps of these the most notable as preparatory of his great future work were three papers on "The Early Stages of Inflammation," published in the *Philosophical Transactions of the Royal Society* in 1857, and two papers which appeared in the *Edinburgh Medical Journal* on the "Coagulation of the Blood." He was elected a Fellow of the Royal Society in 1860. In the same year he was appointed by the Crown successor to Professor Lawrie in the Chair of Surgery in the University of Glasgow; and on the opening of the summer session he began those nine years



JOSEPH LISTER

Professor of Clinical Surgery in the University of Edinburgh
(1869-1878)

of work and teaching in our city, which he characterized, in a letter written to Lord Provost Sir William Bilsland, when it was proposed to confer upon him the Freedom of the City in 1908, as "the most productive and the happiest years of my life." During the whole of his stay in Glasgow the University classes were conducted in the old buildings in the High Street, and the medical students received all their clinical instruction in the Royal Infirmary. The Professors had no *ex officio* position as Physicians and Surgeons of the Infirmary, and so at first Lister was without any hospital wards. In 1861, however, he was elected a Surgeon; and there then began thirty-two years of uninterrupted hospital service, the most fruitful of great and beneficent results which the world has ever known. But before considering the character of the changes which he introduced, it will be well to indicate, if I can, in a few sentences, what the condition of surgical practice at that period really was.

Surgery was then not only a limited but an uncertain and a disappointing art. The introduction of anaesthesia by ether and chloroform some time previously had initiated great changes. Pain being abolished, operations were robbed of no small part of their terror, and sufferers, in their anxiety to be restored to health, submitted more willingly to such operative measures as were recommended for their cure. In this way a great impetus was given to the surgical art. New operations were devised and employed, while those which were old and well-established were resorted to in a larger number of cases. "And yet unhappily," as has been well said by Sir Clifford Allbutt, "this new enfranchisement seemed to be but an ironical liberty of Nature, who, with the other hand, took away

what she had given." Uncertain as the healing of wounds had always been, the uncertainty and disappointment which dogged the footsteps of the Surgeon became increasingly greater as the scope of Surgery was extended. In almost all wounds, whether inflicted by the Surgeon or by accident, inflammation and suppuration, with their inevitable accompaniments of pain and fever, were expected as a matter of course. And these things were only the beginning of evil. No matter what skill and care had been expended on the making and dressing of the wound, the issue was necessarily looked forward to with doubt and anxiety. Few of those who did recover did so without serious episodes and complications of some sort. All suffered from pain and fever more or less pronounced, and very many only reached the *terra firma* of convalescence by swimming for their lives throughout weeks or months of severe and painful illness. Secondary haemorrhage, lockjaw, erysipelas, blood-poisonings of various kinds and degrees, and hospital gangrene were never all absent from the hospital wards at any one time; and repeatedly pyaemia—a most fatal form of blood-poisoning—and hospital gangrene became alarmingly epidemic. To quote the words of a contemporary and competent witness, Sir James Simpson, "The man laid on an operating table in one of our surgical hospitals is exposed to more chances of death than was the English soldier on the field of Waterloo." In the absence of any certain knowledge of the real mode of causation of these wound-begotten diseases, and, therefore, of any, sure means of avoiding their occurrence, the surgeon felt no real personal responsibility regarding them, whatever grief and disappointment he might experience when his

best efforts repeatedly ended in disaster and failure. When his patients were decimated and his heart was well-nigh broken by those terrible visitants (now, thank God, to all intents and purposes banished for ever from operative surgery), he received the sympathy of his friends and pupils. He had done his work well, and a hail in harvest had come to destroy it. He was in no way to blame. He was a man beset by misfortune.

This was the state of Surgery when Lister began his experience as an hospital surgeon in the Glasgow Royal Infirmary. Before coming to Glasgow he had already commenced a valuable investigation into the essential nature and determining causes of inflammation and suppuration in wounds, and those of us who were his pupils after he came can recall the enthusiasm with which he pursued this line of study. He taught from the first that the prime cause of suppuration in wounds was the decomposition of blood and serum retained within them, brought about in some way through the influence of the atmosphere. In the wards he insisted on scrupulous cleanliness, on the frequent washing of the hands of all those engaged at operations or in dressing wounds, while he used constantly various deodorant lotions, and recommended the frequent changing of dressings in all suppurating wounds. By way of preventive treatment, various antiseptic substances were administered internally in frequent doses to every patient admitted with a recent wound. But all was really to no purpose. Wound diseases were still rife, and Death continued to claim its appalling roll of victims. I can recall with vividness the great and sincere distress which repeated experiences of disaster, often in the most promising cases, produced

in Lister's mind at that time. He used frequently to say that it was a doubtful privilege to be an hospital surgeon, and out of this divine discontent with things as they were in the surgical world ultimately grew the great and beneficent reforms which he introduced into its methods and practice. It is related that, about this time, he was one day going round his wards and came to the bedside of a patient whose arm had been broken and very severely crushed, without, however, any wound of the skin having been produced. Turning to the students, he said, "Gentlemen, it is a common observation, that when severe injuries are received without the skin being broken, the patients usually recover, and that without any severe illness. On the other hand, trouble, often of the gravest kind, is always apt to follow, even in trivial injuries, when a wound of the skin is present. How is this? I cannot help thinking that the man who is able fully to explain this problem will be one who will gain for himself undying fame." It was this problem which he set himself to solve by endeavouring to devise some form of treatment which would place external and open wounds in as good a position in regard to the chances of putrefaction and consequent suppuration as those which were still separated from the external world by an envelope of unbroken skin, and this was the ideal which he always kept before him. The general belief then held was that the changes in the blood and other fluids of the wound were brought about, in some way, through the influence of the oxygen of the air. But just at this time a great French chemist, Louis Pasteur, published the results of a series of brilliant researches and experiments which seemed to establish entirely that the putrefaction of

organic fluids was caused by the action of certain living germs suspended in the atmosphere, and existing, therefore, upon all surfaces and substances with which the atmosphere was in constant contact. Pasteur was a pure chemist, and while recognizing the important bearing of his discoveries on the processes of many trades and industries, he was quite ignorant of the subject of Surgery and its practice. But no sooner had Lister read the papers of Pasteur than he was convinced of their essential truth. The experiments were afterwards abundantly verified by an authoritative Commission appointed by the French Government to report upon them; but Lister at once independently satisfied himself of their trustworthiness by repeating, with his own hands, those of them which appeared to him to be most important and convincing.

Possessed strongly as he was of the scientific imagination, he seems to have recognized at once the important bearing which those researches must have on the questions which had been occupying his own attention so long. In one of the earliest communications made by him on the subject—an address given at the Dublin Meeting of the British Medical Association in August, 1867—these were his opening words: “In the course of an extended investigation into the nature of inflammation and the healthy and morbid conditions of the blood in relation to it, I arrived several years ago at the conclusion that the essential cause of suppuration in wounds is decomposition brought about by the atmosphere upon blood or serum retained within them; and, in the case of contused wounds, upon portions of tissue destroyed by the violence of the injury. To prevent the occurrence of

suppuration, with all its attendant risks, was an object manifestly desirable but until lately apparently unattainable, since it seemed hopeless to exclude the oxygen which was universally regarded as the agent by which putrefaction was effected. But when it had been shown by the researches of Pasteur that the septic properties of the atmosphere depended not on oxygen or any gaseous constituent, but on minute organisms suspended in it, which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided without excluding the air by applying as a dressing some material capable of destroying the life of the floating particles."

The material he was led to try for this purpose was carbolic acid, a substance little known in this country at that time. Having obtained with difficulty a sample of this acid, he determined to try what power it might possess of preventing putrefactive changes in compound fractures. In every broken limb there is a severe and large internal wound. Not only is there a break of bone, opening into the marrow cavity, but muscles and other soft tissues are lacerated and blood-vessels are torn, while in the wound thus formed a mass of blood soon collects. Yet repair of such an injury occurs quickly, without fever or other constitutional disturbance, if only the skin remains unbroken and septic germs in the air and on the skin of the injured limb itself are so excluded. For, although Lister taught at first that the germs to be dreaded were derived directly from the atmosphere, he afterwards learned and taught that direct harm from the atmosphere, although by no means to be entirely disregarded, was neither so frequent nor so severe as he



SIR JOSEPH LISTER, BART.

Professor of Clinical Surgery in King's College Hospital, London
(1878-1893)

at first supposed, and that dangerous and virulent germs were more likely to enter the wound from the skin of the patient's own limb and from that of the hands of the surgeon and his assistants, as well as from the clothing covering the wounded part. If the skin, therefore, remained untorn or uncut the internal wound caused no anxiety as regards the question of life or death, and the injury was spoken of as a *simple* fracture. If, on the other hand, there was a wound connecting the seat of fracture with the external world, and so permitting of the admission of septic germs into its interior, the whole aspect and outlook of the case were altered. The injury was now a *compound* fracture, and was at once recognized as fraught with danger to both limb and life. It was very natural, therefore, that Lister should make his first attempt at antiseptic treatment in such cases.

It would be tedious and, probably, neither very interesting nor very intelligible to all of you, if I tried to describe to you in detail, the technical character of the various devices and dressings by which the treatment was carried out. Suffice it to say that carbolic acid was introduced into the wound of the fractured limb to destroy any germs which had already gained access to it, while a dressing was placed over it of such a character that blood and other exudations were permitted to escape while, at the same time, living organisms were prevented from entering.

Crude as the first attempts at antiseptic treatment now appear, they served to demonstrate the truth of the principles relied upon, and proved that suppuration might be prevented in compound fracture, and as safe

and tranquil a course pursued as if the injury had been a simple one from the first.

Shortly after this early work in relation to compound fracture, Lister's attention was turned to the treatment of abscess, especially to that of large chronic abscesses connected with disease of bone—a form of disease which we now know, although we did not know then, is due to tubercle. Such abscesses were of very common occurrence, and, especially if the bony focus of the disease was deep-seated, they were almost always fatal in the adult. Even in the young child they were scarcely less disastrous in their issues. By the introduction of somewhat similar methods as he had adopted in the case of compound fracture, Lister proved that, by careful antiseptic treatment, even this formidable class of diseases may be conducted to a successful termination. Provided that living septic organisms were rigidly excluded, Nature was found equal to the task of effecting a cure.

There remained to be dealt with the incised wounds made by the surgeon. Owing to the immense impetus given to Operative Surgery by the antiseptic method of treatment, these now constitute the great majority of surgical wounds, although at the time of which I have been speaking they were much fewer in number and more restricted in scope. Still, as we have seen, they were accountable for a terrible death-roll. But Lister soon extended his treatment to this department of the surgeon's work also.

Methods of treating these were devised by which equally surprising results were obtained as had followed the application of the antiseptic principle to compound fractures and to abscesses ; and, although the technical

details of the treatment were destined to undergo much change, at the hands of its originator, in years to come, surgical practice was now established on a firm and lasting basis. As has been said, "the secret had been wrested from Nature which made the Surgeon, to a great extent, the master of the issues of life and death." Wounds were found to heal without inflammation, supuration, or constitutional disturbance; compound fractures and dislocations were robbed of the former awful dangers which surrounded them; large chronic abscesses connected with bone disease proved to be no longer incurable, even when occurring in the adult; large arteries were ligatured without fear of secondary hæmorrhage or other mishap; joints opened, whether by accident or by the surgeon's knife, healed without a disquieting symptom, and incursions were successfully made into departments of practice which, up to that date, had been looked upon as forbidden ground. As it has been well put by a French surgeon, Lucas-Championnière, "Lister gave a scientific basis to Surgery. He made it rest on established truths. He swept away the uncertainty in which the greatest surgeons up to that time had left it. Inspired by the ideas of Pasteur concerning the infinitely little and on fermentations, he conceived the idea that the infinitely little and its germs of all kinds, scattered everywhere in the outer world, strove against the natural efforts of the organism towards healing. . . . His genius showed itself in this: that, starting from a fundamental observation verified scientifically, he succeeded in determining the general laws of repair."

Such was the satisfactory position to which the new

Surgery had attained when he left Glasgow in the autumn of 1869, having been appointed by the Crown to succeed his father-in-law in the Chair of Clinical Surgery in the University of Edinburgh. Here he entered on what may be called the fourth period of his career. The methods and dressings by which the antiseptic principle had been carried out hitherto were somewhat cumbrous and difficult of application, especially in the hands of those who trusted to written descriptions of them, and during the whole of his occupancy of the Edinburgh Chair, he worked with constant industry and marvellous ingenuity, in devising better and simpler forms of dressing. Still, as he himself often remarked, long before he left Glasgow, in spite of the comparatively crude character of his methods, he had reached a practical certainty of securing aseptic results, which alone justified many of the operations which he then performed. The successive modifications of his dressings were made for the sake of convenience rather than for greater security.

The last period of his active professional life began in 1877, when he accepted an invitation to become Professor of Clinical Surgery in King's College Hospital, London. Here, until his retirement from surgical work in 1893, he may be said to have been engaged in the completion of the details of the antiseptic system of treating wounds, and as has been very justly remarked by Sir Watson Cheyne, "during this period his methods of treatment approximated more and more to his ideal of converting open wounds, as regards their subsequent course, to the condition of wounds which are still protected by an unbroken skin."

After the cessation of his active surgical life and the loss

of his wife—two events which almost synchronized with one another—he became a much altered man. It is true that he afterwards filled with much acceptance, for a term of five years, the position of President of the Royal Society, the highest position to which a scientific man can attain, and even continued to add occasionally to the great mass of communications on surgical and scientific subjects which his vast industry had already furnished. But the springs of life were slowly but surely failing him, and having gone, in July, 1908, to Walmer in Kent, he lived there a sequestered life, too blind to be able to read with ease, too deaf and feeble for sustained conversation, weak, dispirited, and sleepless. To this unhappiness the only relief arose from the kind and tender ministrations of his devoted sister-in-law, Miss Syme. It seems a mysterious dispensation of Providence that his life, which had brought such untold blessings to others, should itself end so darkly. From this infirm state Death relieved him on 10th February, 1912, within a few weeks of the conclusion of his eighty-fifth year.

But Lord Lister was great in character as well as in achievement, and a short reference to some traits of that character, as observed by one who was closely associated with him in Glasgow, and who was honoured with his intimate friendship to the end of his life, may prove not altogether uninteresting.

And the first characteristic which must have struck everyone who conversed freely and habitually with him was his constant and grateful recollection of those who had taught him in early life, and who, by their teaching, had aroused in him powers which influenced both the earlier and later developments of his scientific work. To

his father he was ever piously grateful for the example and impetus which had been derived from him. Of his early teachers three names were frequently on his lips—Lindley, Graham, and Sharpey. They aroused in his youthful mind a love which never languished for botany, chemistry, and physiology. Often in country walks he was wont, from time to time, to pluck some plant or flower growing by the wayside, and having demonstrated its characteristics by a rough dissection with his fingers and the aid of a pocket lens, which he always carried, he would throw away what remained, saying, "I learned these facts in Lindley's class many years ago. He was a most admirable teacher." To the great chemist Graham he often acknowledged his indebtedness for that sound acquaintance with chemical principles without which he could hardly have succeeded in his numerous investigations and experiments, when developing and perfecting his antiseptic methods of treatment. He afterwards came under the close personal influence of Sharpey, and by his encouragement, as we have seen, was very early led into the paths of physiological investigation and imbued with a lasting love for them. In later years his sense of what he owed to the teaching and example of his father-in-law, Professor Syme, was often implied, if not expressly stated, in his lectures to his students. Of the same character was his frequent and handsome acknowledgment of his indebtedness to Pasteur. This sense of indebtedness to others, constituting as it does a splendid example for all of us, was no doubt only part and parcel of that great and natural modesty which powerfully influenced all his views of his own work and life, and which constituted one of the great charms of his

character. Less generous-hearted men, and among them even some who have notably added to human knowledge and human power, have often had or seemed to have little or no admiration for anything existing outside of themselves, and little consciousness of having received any extraneous aid. They have acted and spoken rather,

“ As if a man were Author of himself
And owned no other kin.”

But it was far otherwise with Lister, as those know well who were often in his company.

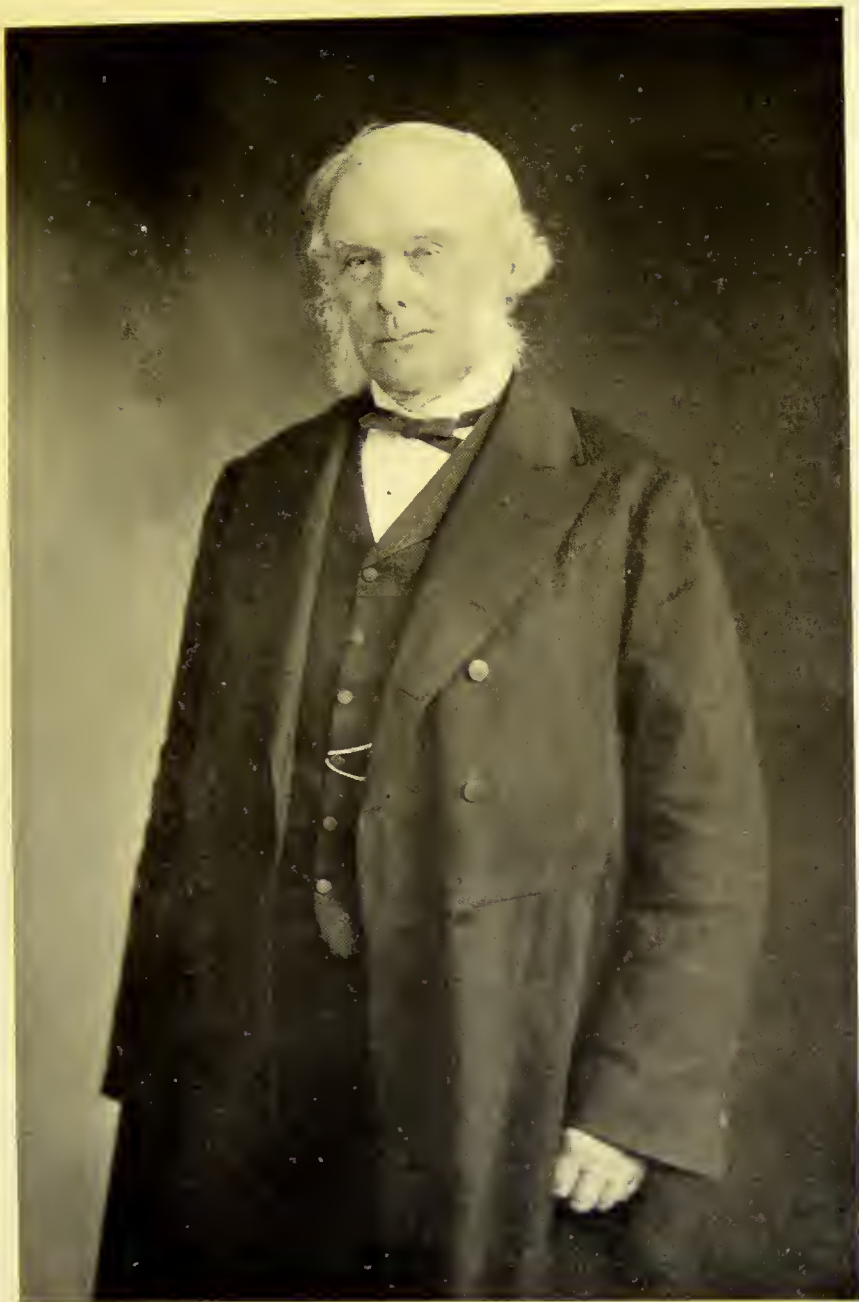
Another very remarkable feature was his marvellous patience and perseverance in any work which he undertook. Neither adverse criticism from without nor difficulties arising in the course of his investigations and experiments in any way damped his zeal or arrested his energy. They seemed rather only to strengthen his determination to succeed. In this connection I should like to quote a few sentences from a letter which I received from Mr. Butlin (afterwards Sir Henry Butlin), another well-loved leader of the surgical profession, who predeceased Lister by only a few months. The letter was written to me acknowledging a copy which I had sent to him of a book which I published, *On the Evolution of Wound-treatment during the last Forty Years*. He wrote : “ I forget whether I was a dresser or house-surgeon to Paget, when he first told us there was a man called Lister in Scotland who had recommended a new method of treating psoas abscess, and we would try it. But our technique was so indifferently applied that the dressing was constantly slipping down and the bed was bathed in pus, until the usual shiver occurred and the patient went the way of all flesh. Your book tells over again the

story of that enormous patience which is so characteristic of great minds of Lister's type. To irritable and active persons like myself such patience is almost inconceivable ; but I suppose that they have it partly by right of birth, and partly as the result of training and strong will. Nothing seems to suffice to weary or dishearten them. Whatever happens *they* endure to the end and *we* are saved."

Another characteristic was his wonderful power of meeting, and devising means for surmounting difficulties as they arose in the course of any work in which he was engaged. In a letter received from Principal Sir William Turner (under circumstances similar to those connected with Mr. Butlin's letter), Sir William wrote : " Your book has recalled many conversations with Lister which I had the advantage of, partly when, as Professor in Glasgow, he used not unfrequently to come to Edinburgh to see Mr. Syme and later when he held the Edinburgh Chair. I learned in this way how the fundamental conception entered his mind and developed step by step in all its ramifications. What used to greatly impress me was the wonderful ingenuity he showed in devising methods to meet the difficulties which necessarily arose in the treatment of problems occurring during the evolution of the antiseptic system."

This observation is a very just one, and I could illustrate it by citing many instances, did time permit. I shall content myself with one of unusual interest.

Not long after Lister went to Edinburgh to occupy the Chair of Clinical Surgery he was summoned to Balmoral one day by the late Sir William Jenner to see her Majesty Queen Victoria, to whom he had been appointed Surgeon-



LORD LISTER

President of The Royal Society (1895-1900)



in-Ordinary in Scotland on the death of Mr. Syme. On arrival there he found the Queen more ill and Jenner more anxious than the nation knew. An acute abscess of considerable size had formed near the armpit of one side of the body, and was occasioning much pain, restlessness, and fever. In due course it was opened with all antiseptic precautions, the line of incision in the skin having first been frozen by means of Richardson's spray apparatus. Up to that time it had been Lister's practice in such cases to introduce a narrow strip of lint dipped in an oily solution of carbolic acid through the incision with the object alike of preventing primary union and of acting as a drain. This practice was followed on the present occasion. Next morning he was disappointed to find that little or no drainage had taken place, and, on withdrawal of the lint, thick matter, similar to that of the original contents of the abscess, escaped in quantity. Fever and local tenderness still also persisted. The same state of matters was found at one or two subsequent dressings. During a walk in the open air (a favourite practice with him when trying to solve a perplexing problem) it occurred to him that if he could make use of some aseptic tubular drain, instead of the oiled lint, matters might progress more favourably. Accordingly, on retiring that evening, he cut out a piece of the india-rubber tube of the Richardson's spray apparatus of suitable length, and having cut holes in its sides and sewed into the end of it a piece of silk thread, he placed it to soak all night in the soap-dish in his bedroom in some watery solution of carbolic acid. In the morning he was pleased to find that the rubber was in no way weakened or altered in structure by its immersion in the acid, and

when changing the dressings he substituted the tube for the strip of lint. At the next dressing he had, as he said to me afterwards, "the inexpressible joy" of finding that not only had free drainage occurred into the antiseptic dressings, but that the discharge was now very thin and watery. Soon it became entirely serous in character, while it rapidly diminished in quantity. All constitutional disturbance disappeared, and very soon the abscess cavity was obliterated and sound healing secured. This was the first occasion on which he ever made use of an india-rubber drainage tube. On returning to Edinburgh he repeated the practice in a case of amputation of the thigh in the hospital with the best possible results. He immediately had rubber drainage-tubes made by the manufacturers and ever afterwards used them constantly. Similar tubes had been devised and used by a French surgeon, Chassaignac, early in the century for carrying off accumulations of putrid pus from deep-seated situations ; but it is my impression that the idea occurred to Lister quite independently. Whether this be so or not, the use of them, when rendered aseptic by carbolic acid, proved a valuable addition to antiseptic treatment.

One of the rarest of human qualities is the ability to look at familiar objects and phenomena with all the interest and inquisitiveness of one who may see them for the first time. Intimacy, so far from increasing, really inhibits our insight. Natural phenomena to which we are thoroughly habituated no longer excite our curiosity and are apt to be regarded as ultimate facts beyond which no enquiry can carry us and from the contemplation and examination of which no useful result can follow. "The influence of familiarity," writes the late Professor

Ferrier in his *Institutes of Metaphysic*, "in deadening the activity and susceptibility of the mind is overwhelming to an extreme. Drugged with this narcotic man's intellect turns with indifference from the common and the trite and courts only the startling and the strange. Every one must have remarked, both in his own case and in that of others, how prone we are to suppose that little advantage and no valuable result can accrue from a careful study of that to which we are thoroughly habituated. 'Perpetual custom,' says Cicero, 'makes the mind callous, and people neither admire nor require a reason for those things which they constantly behold.' Rare events are the natural aliment of wonder, and when it cannot be supplied with these, our inquisitiveness is apt to languish and expire." Again, further on in the same passage, Professor Ferrier says: "Instead of striving, as we ought, to render ourselves strange to the familiar, we strive, on the contrary, to render ourselves familiar with the strange."

I am sure that anyone who was ever closely associated with Lister and has watched the working of his mind, will appreciate my statement when I say that more than any man I ever met, he had the power and the habit of rendering himself "strange to the familiar."

It is because little children, travellers in a world quite new to them, are still strange to what is familiar to us that they so frequently address to us most puzzling questions. A little boy, five years old, was one day pushing a china ornament backwards and forwards on a small table, when I asked him to desist, explaining that if he brought it quite to the edge of the table it would fall to the floor and be broken in pieces. He at once

asked, " Why does it fall to the floor ? " We know that a great man once asked himself the same question with childlike inquisitiveness, when, as tradition tells us, he beheld the familiar sight of an apple falling to the ground from a tree, and by his genius not only discovered the law which caused it, but proved that the force thus manifested at the earth's surface is the same, as to its nature, with that which pervades the whole planetary system. Truly, he that would enter the Kingdom of Science must become as a little child.

Lister's attitude towards, and his enquiry into, the causes of suppuration were a good example of the manner with which he regarded, in contrast with others around him, familiar facts and phenomena. He had been for years working at the subject, at least in its theoretical aspects, before coming to Glasgow, and looked upon putrefaction and suppuration from an early period of his investigations as the real causes of wound-diseases. The grief and mental worry arising from his experiences, often repeated, of such fatal diseases, produced in his mind a sense of discontent with things as they were, and this seemed to many of us who were his pupils in strange contrast with the resignation with which all of his colleagues viewed similar experiences. They appeared to regard them as inevitable and quite unpreventable so long as the human body was what it was. But he never admitted to his own mind the inevitableness of either suppuration or its consequences. He was, therefore, fully prepared for the truths promulgated by Pasteur. As Clifford Allbutt has happily put it, " Though Lister saw the vast importance of the discoveries of Pasteur, he saw it because he was watching on the heights ; and he

was watching there alone." It was a dictum of Pasteur himself that "chance favours only the prepared mind."

I shall refer to only one other characteristic, which I believe to have been the chief mainspring of all Lister's extraordinary industry and perseverance in the work which he had set himself to accomplish, viz. a passionate desire to lessen the sum of human misery and death. He had no great love of fame. The well-known couplet of Pope accurately describes his attitude in this respect :

" Nor Fame I slight, nor on her favours call :
She comes unlooked for, if she comes at all."

When honours came, they seemed always to cause in his mind a sense of surprise, and gave pleasure chiefly because he saw in them recognition of the truth and the value of his work. As little had the idea of amassing wealth any attraction for him. "He set his heart upon the goal, not on the prize." When he was in Glasgow he not unfrequently forgot professional appointments, being absorbed in the interest of his hospital and laboratory work. But the one thing which gave him pleasure was the knowledge that his doctrines were receiving recognition and steadily progressing in this and other countries. Speaking, in his Presidential Address at the Meeting of the British Association at Liverpool in 1896, of his first successful attempts in the treatment of compound fractures by the antiseptic method, he referred to "the joy of seeing these formidable injuries follow the same safe and tranquil course as simple fractures." When he received the Freedom of the City of Edinburgh in 1898, he assured the audience that much and highly as he esteemed the honour, that and every other worldly distinction were as nothing in comparison with the hope

that he had been the means of reducing in some degree the sum of human misery.

On the occasion of his eightieth birthday, messages of congratulation came to him not only from all parts of the British Empire, but literally from every country in the world. His letter-box was filled to overflowing many times on that day, while a steady procession of telegraph messengers brought telegrams and cablegrams from early morning till night. Deputations, too, from home and abroad, waited upon him and presented addresses. Writing to me a few days afterwards, he said: "I have been almost overwhelmed by the torrent of congratulations that came to me on my birthday. The applause that now greets me from my professional brethren has this satisfactory about it, that it shows that the antiseptic principle has received pretty universal acceptance. I was particularly gratified by the very kind and generous address from the dear University of Glasgow." A few days later he used these words in another letter: "The ovation that I have been receiving has been almost overpowering. I am perfectly astonished at the change in the opinion of the profession (as to the value of my work) which has been taking place while I have been for many years doing nothing for Surgery. Addresses have come from home and abroad, many of which I have not yet had time to acknowledge. One of the most remarkable is from the Council of the College of Surgeons of England. I could not have believed that that body could so express itself." ¹

¹ The concluding paragraphs of this Address were as follows:

"We are sure we shall be expressing the thoughts, not only of the present and ex-members of the Council, but also of every Fellow and

I saw him in London shortly after he had been made a Privy Councillor, and in the course of conversation, he said to me, "What pleased me far more even than the honour of being made a Privy Councillor was the fact that, when my turn came to step forward and shake hands with the King (King Edward) he said to me, 'Lord Lister, I know well that if it had not been for you and your work, I should not have been here to-day.' " Some one had evidently informed His Majesty how entirely abdominal surgery had been rendered possible by Lister's investigations and teaching.

I have left myself no time to speak of his scrupulous truthfulness, of his courtesy, of his appreciation of the work of others, and especially of those who were still young men, of his forgetfulness of himself, of his reverence, of the genuineness and simplicity of his Christian faith; but I have perhaps said enough to show that he has left to the world a priceless heritage and to his profession an inspiring example.

Member of this College, when we say that you more than any other who has ever lived, have succeeded in applying scientific and practical surgery to the benefit of mankind and to the sparing of human life and suffering. The blessings which have followed from your life's work have been innumerable, and the knowledge that they increase and become, as time passes, more and more manifest must, we feel assured, be a source of extreme happiness and consolation to you in your distinguished and honourable retirement."

It is evident, from the remark with which Lord Lister concludes the letter which I have quoted above, that the bitter and strong opposition offered to his teaching in former days by many very distinguished Fellows of the College, although always treated by him in the most forbearing manner, had not been entirely forgotten. Surely now was the hour of his triumph; although he, of all men, would have been the last to say so.

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